STRATEGIC PLAN FOR THE SUBSISTENCE FISHERIES RESOURCE MONITORING PROGRAM, SOUTHCENTRAL REGION, 2004

EXECUTIVE SUMMARY

The Subsistence Fisheries Resource Monitoring Program (Monitoring Program) was established to meet the informational and communication demands of Federal management responsibility for subsistence fisheries on Federal public lands. The mission of the Monitoring Program is to identify and provide information needed to sustain subsistence fisheries on Federal public lands, for rural Alaskans, through a multidisciplinary, collaborative program.

To date, information needs for the Monitoring Program were identified through the Regional Advisory Councils (Councils). Although this process provides a valuable public forum to identify information needs, it has proven difficult to collectively agree upon strategic priorities. Funding has remained static since inception in 2000, and submitted proposals routinely and greatly exceed available funds. To ensure that the Monitoring Program focuses on the highest priorities for management of subsistence fisheries on Federal public lands for the next 3-5 years, the Office of Subsistence Management (OSM) initiated a more rigorous strategic planning process to identify and prioritize program goals, research objectives, and information needs by region. This effort was initiated for the Southcentral Region, specifically Federal public lands within the Copper River basin and Prince William Sound.

Strategic planning occurred during two regional workshops, interspersed by public and Council review:

Phase	Time frame	Activity
One	April 20-22, 2004	Workgroup meeting in Anchorage to structure the problem by Fishery Unit and prioritize information needs
	June, 2004	Interim draft report distributed to workgroup for review and comment
	July, 2004	Workgroup comments incorporated into interim report
Two	September, 2004	FIS staff present interim report to the Council and solicit comments
Three	October, 2004	Workgroup inventories projects by information need
	November 8-9, 2004	Workgroup reconvenes in Anchorage to address review comments, revisit and finalize structure, review project inventory and conduct gap analysis
	February, 2005	Interim draft report distributed to workgroup for review and comment
	March, 2005	Final report published and distributed

A total of 20 workshop participants were solicited from: regional fisheries managers and researchers including Federal agencies (US Fish and Wildlife Service, USDA Forest Service, Bureau of Land Management, National Park Service, Bureau of Indian Affairs); Alaska Department of Fish and Game (Division of Sport Fisheries, Division of Commercial Fisheries, and Subsistence Division); the Southcentral Regional Advisory Council; Alaska Native organizations (Partners for Fisheries Monitoring staff, Native Village of Eyak); and consulting organizations (LGL Ltd. Environmental Research Associates). Dr. Margaret Merritt (Resource Decision Support), a professional facilitator and decision analyst, provided training in decision-making methodology, guided the discussion, and analyzed results. A systems approach, the analytic hierarchy process (AHP), was used to structure the discussion and prioritize information.

The strategic plan consists of three products:

(1) a framework of prioritized goals, objectives and information needs for Federal subsistence fishery management within the region;
(2) an inventory of projects, past and present, that provide relevant information for each identified information need; and,
(3) recommendations for actions that should be considered under the Monitoring Program for each information need – referred to hereafter as the *gap analysis*.

These products provide the framework to define strategic priorities for the Monitoring Program. Strategic priorities are: high priority information needs - identified in (1) above; that are either ongoing, or insufficiently addressed in the current program – see (2) above; for which specific recommendations have been identified – see (3) above.

Major accomplishments of the workshops include:

- identification and prioritization for informational needs of six subsistence fishery units in the Copper River and Prince William Sound,
- the development of planning frameworks for each subsistence fishery unit,
- project inventories for all subsistence fishery units.
- completion of all strategic planning products for the Copper River Salmon subsistence fishery unit, and
- completion of most strategic planning products for the Copper River Freshwater Species subsistence fishery unit.

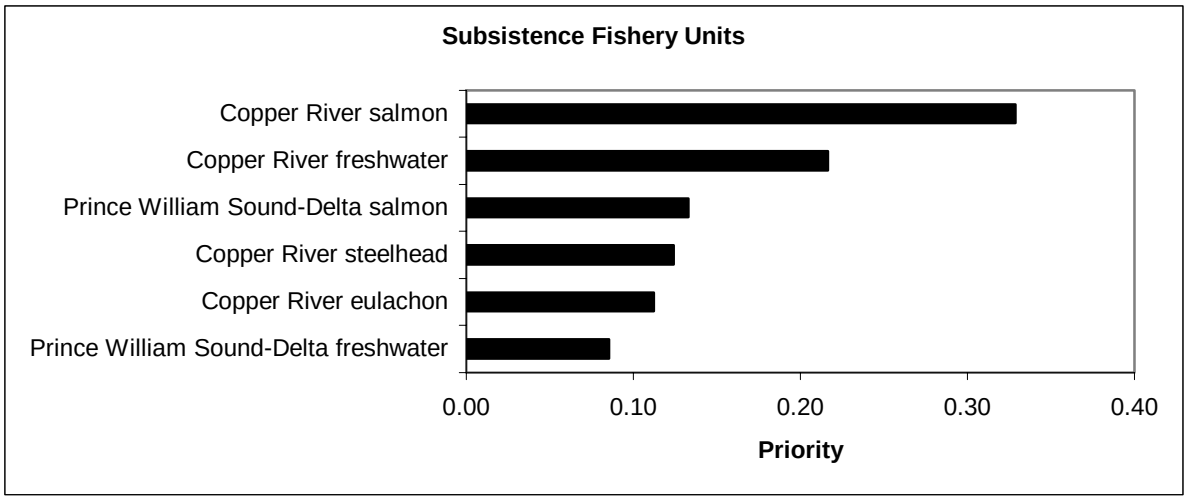
Subsistence Fishery Units

Subsistence fishery units describe the major functional units for management and regulation of subsistence fisheries on Federal public lands, and are defined by geography, species, and users. Subsistence fishery units were prioritized for the need for information based upon assessment of:

- whether the fish species in question provide a primary or targeted subsistence resource;
- the extent of Federal jurisdiction over the fishery;
- the degree of allocation issues between subsistence and other competing uses of the resource; and,

- the extent to which the fish species or stocks in question are potentially vulnerable to over harvest.

Six subsistence fishery units were identified for the Southcentral Region and prioritized for information needs as follows:



Within the Copper River Salmon fishery unit, the workgroup recognized sockeye and Chinook salmon as high priorities for informational needs, and recommended that assessment for coho salmon not be funded under the Monitoring Program over the next 3-5 years. Within the Copper River Freshwater Species fishery unit, lake populations of burbot and lake trout were identified as the only species that should be considered for assessment projects under the Monitoring Program during this planning horizon.

Framework

Four goals were identified for the Monitoring Program to achieve its mission:

1. ***Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.***
   Information needed to achieve Goal 1 includes estimates of abundance, composition, timing, and distribution, as well as developing an understanding of critical factors that affect production.

2. ***Assess and monitor subsistence fisheries to document and provide for subsistence uses.***
   Information needed to achieve Goal 2 includes baseline estimates and descriptions of subsistence use patterns including harvest, effort, methods, timing location, and demographics, as well as developing an understanding of critical factors that affect subsistence use patterns.

3. ***Develop and evaluate effective regulatory and management strategies to provide for subsistence uses.***
   Actions to address Goal 3 include collecting information on customary trade to answer specific regulatory questions, evaluation of management strategies, development of effective information sharing systems, and assessment of competing fisheries.

4. ***Promote public support and involvement for fisheries monitoring.***
   Achieving meaningful collaboration in information gathering and assessment requires education and involvement outside of government agencies. Outreach activities include development of training materials and forums, professional staff, and educational opportunities.

The first three goals form the basis for the strategic plan developed at the workshop because these involve the collection and synthesis of information, whereas the fourth goal, concerning public support and involvement, will undergo its own planning process.

Objectives, defined as measurable statements of purpose, were formulated for the highest priority Copper River salmon subsistence fishery unit. Information needs were identified for each objective. Information needs are defined as specific issues, impediments to overcome, data gaps, or uncertainties. Importance among goals, objectives, and information needs was judged according to the strategic advantage to Federal subsistence management of knowing about:

- the extent to which knowledge provides for sustainability of the resource;
- the extent to which knowledge provides information about socioeconomic benefits to rural subsistence users; and,
- the consequence of not having full knowledge.

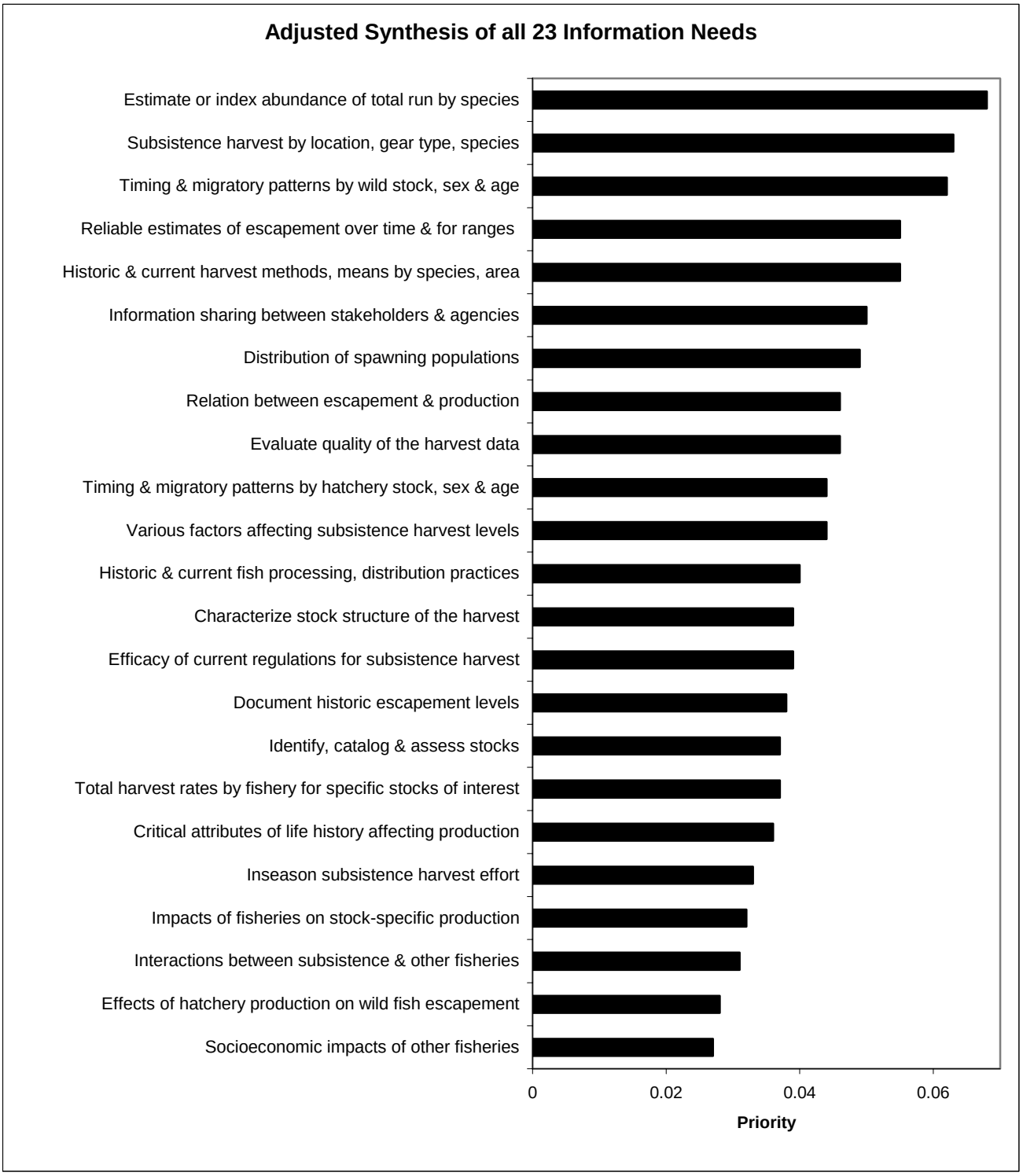
Strategic Plan for Copper River Salmon

Because the group rated Copper River salmon as the most important subsistence fishery unit for information needs, effort was focused on completing all strategic planning products by the end of the 2nd workshop.

- Information needs were identified for each objective and prioritized based on the evaluation criteria explained above.
- A comprehensive inventory of all relevant projects, past and present, was developed for each information need. The workgroup provided a broad base of expertise to develop this inventory across organizations and funding sources.
- The project inventory provided the basis to conduct the gap analysis. Two assessments were made for each information need: (1) the current state of knowledge was categorized as *adequate*, *partially known*, or *largely unknown*; and (2) recommendations of what needs to be done under the Monitoring Program over the next 3-5 years was categorized as *no action*, or *consider proposals*.
- The gap analysis was overlaid with the priority ranking of information needs to identify the highest strategic priorities in the Southcentral Region for the annual Monitoring Plan.

GOAL	OBJECTIVE	INFORMATION NEED
1 **0.567** Obtain, develop, improve information to sustain fish populations necessary to provide for subsistence uses.	**A** **0.196** Characterize & define abundance, composition & timing of salmon populations that sustain subsistence fisheries	**0.063** Estimate or index total run abundance by species **0.041** Determine timing & migratory patterns attributable to wild stock, sex & age **0.057** Determine timing & migratory patterns attributable to hatchery stock, sex & age **0.034** Identify, catalog & assess stocks
	B **0.175** Evaluate spawning escapement needed to sustain subsistence fisheries	**0.051** Obtain reliable estimates of spawning escapement over time & across escapement ranges **0.046** Estimate distribution of spawning populations **0.043** Describe relationship between escapement & production **0.035** Document historic escapement levels
	C **0.105** Identify & characterize critical factors that affect population dynamics	**0.039** Evaluate critical attributes of life history affecting production **0.035** Assess impacts of fisheries on stock specific production **0.031** Determine effects of hatchery production on wild fish production
	D **0.090** Develop more cost efficient technology, methods, & approaches for assessment	**0.032** Identify sources of error & improve accuracy of existing methods **0.022** Maintain an inventory & catalog of projects **0.019** Invest in knowledge to design better tools & methods **0.018** Determine extent that information, infrastructure, equipment is transferable across sytems
2 **0.275** Assess & monitor subsistence fisheries to document & provide for subsistence uses.	**A** **0.155** Document and estimate subsistence harvest & effort	**0.054** Estimate subsistence harvest by location, gear type, species **0.039** Evaluate quality of harvest data **0.034** Characterize stock structure of the harvest **0.028** Assess inseason subsistence harvest effort
	B **0.120** Identify & describe past & present subsistence harvest use patterns	**0.048** Describe historic & current harvest methods & means (C&T) by species & area **0.038** Identify environmental, demographic, regulatory & socio-economic factors affecting subsistence harvest levels **0.034** Describe & document historic & current fish processing & distribution practices
3 **0.158** Develop & evaluate effective regulatory & management strategies to provide for subsistence uses.	**A** **0.082** Assess impacts of other fisheries on subsistence fisheries	**0.032** Describe total harvest rates by fishery for specific stocks of interest **0.027** Describe interactions between subsistence & other fisheries **0.023** Describe socioeconomic impacts of other fisheries
	B **0.077** Develop & evaluate management strategies for subsistence fisheries	**0.029** Develop information sharing between stakeholders & agencies **0.024** Examine alternative management strategies **0.023** Evaluate usefulness and effectiveness of current regulation for subsistence harvests

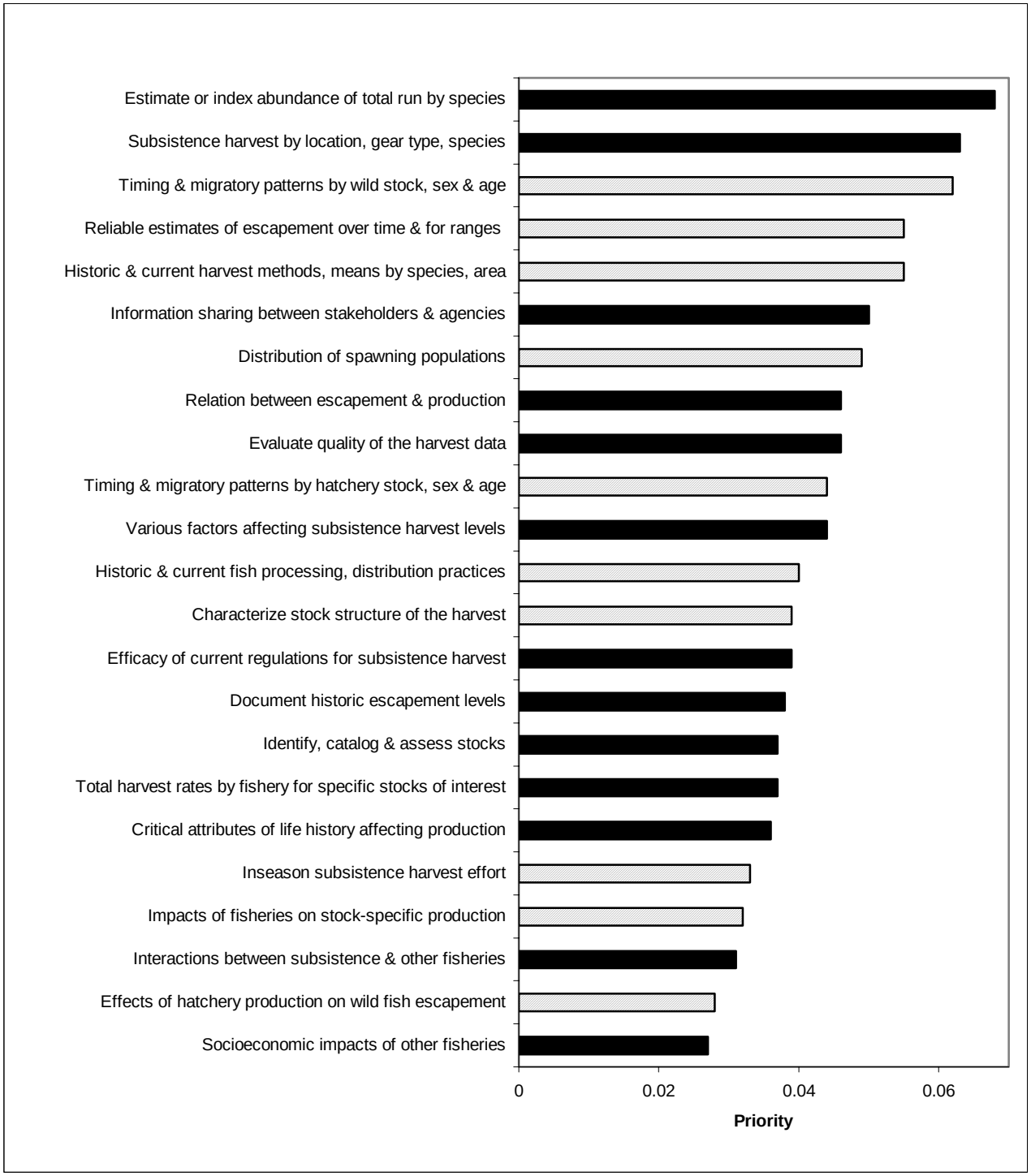
Framework of goals, objectives and information needs for the Copper River salmon subsistence fishery unit, including adjusted weights of importance.



Synthesis of information needs for the Copper River Salmon subsistence fishery unit.

Gap analysis for the Copper River salmon subsistence fishery unit, 2004.

	State	of	Knowledge	To Be	Done
Information Need	**Adequate**	**Partially known**	**Largely unknown**	**No Action**	**Consider Proposals**
1.a.1. Estimate or index total run abundance by species.	**X**				**X**
1.a.2. Determine timing & migratory patterns attributable to wild stock sex, age.		**X**		**X**	
1.a.3. Determine timing & migratory patterns attributable to hatchery stock sex, age.		**X**		**X**	
1.a.4. Identify, catalog, assess stocks.		**X**			**X**
1.b.1. Obtain reliable estimates of spawning escapement over time & across escapement ranges.		**X**		**X**	
1.b.2. Estimate distribution of spawning populations.		**X**		**X**	
1.b.3. Describe relationship between escapement & production.		**X**			**X**
1.b.4. Document historic escapement levels.		**X**			**X**
1.c.1. Evaluate critical attributes of life history affecting production.			**X**		**X**
1.c.2. Assess impacts of fisheries on stock specific production.		**X**		**X**	
1.c.3. Determine effects of hatchery production on wild fish escapement		**X**		**X**	
2.a.1. Estimate subsistence harvest by location, gear type, species.	**X**				**X**
2.a.2. Evaluate quality of harvest data.		**X**			**X**
2.a.3. Characterize stock structure of the harvest.		**X**		**X**	
2.a.4. Assess inseason subsistence harvest effort			**X**	**X**	
2.b.1. Describe historic & current methods and means by species, area.	**X**			**X**	
2.b.2.Identify environmental, demographic, regulatory, socioeconomic factors affecting subsistence harvest levels.		**X**			**X**
2.b.3. Describe, document historic and current processes, distribution practices	**X**			**X**	
3.a.1. Describe total harvest rates by fishery for specific stocks of interest.		**X**			**X**
3.a.2. Describe interactions between subsistence and other fisheries.			**X**		**X**
3.a.3. Describe socioeconomic impacts of other fisheries.		**X**			**X**
3.b.1.Develop information sharing between stakeholders and agencies.		**X**			**X**
3.b.2.Evaluate usefulness and effectiveness of current regulations for subsistence harvests.		**X**			**X**



Information needs recommended for proposals from the gap analysis, shown as solid black bars, in rank order of priority, for the Copper River salmon subsistence fishery unit, Southcentral region, 2004 (hatched bars indicate "no action").

Strategic Plan for Copper River Freshwater Species

Objectives and information needs for the remaining subsistence fishery units were largely subsets of those identified for Copper River salmon. There was insufficient time to prioritize objectives and information needs within the remaining fishery units. Using the information from the project inventory, the workgroup conducted a gap analysis for this fishery unit. Time limitations precluded the workgroup from prioritizing information needs, as was done for the Copper River Salmon fishery unit.

The workgroup recognized that the central issue for subsistence fisheries managers is to maintain harvests for lake populations of burbot and lake trout within sustainable limits. In addition, they considered the state's comprehensive freshwater research program in the Copper River Basin, particularly noting its expense, and concluded that the primary freshwater stocks of interest during the 3-5 year planning horizon should be focused on burbot and lake trout populations in McCarthy and Nabesna Road lakes, and Tanada and Copper lakes. Removal of other species (Arctic grayling, Dolly Varden, and whitefish) from consideration of Goal 1 information needs for this fishery unit during the 3-5 year planning horizon effectively reduced Goal 1 to four unique information needs that the workgroup did not partition by separate research objectives. The workgroup concluded that information needs relating to Goal 1 for species other than burbot and lake trout, particularly riverine populations, would most appropriately be left for future strategic planning. The workgroup recognized that current information needs for other species could be satisfied under Goals 2 and 3, particularly monitoring of the subsistence fisheries for these species.

Objectives and information needs identified for goals of the Copper River freshwater species subsistence fishery unit, 2004.

Goals	Objectives / Information Need
1. Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.	1. Estimate or index total abundance and composition by species. 2. Evaluate spawning abundance needed to sustain subsistence fisheries. 3. Identify, characterize critical factors affecting population dynamics. 4. Document historic distribution and abundance levels.
2. Assess and monitor subsistence fisheries to document and provide for subsistence uses.	2a. Document and estimate subsistence harvest and effort. 1. Estimate subsistence harvest by location, gear type, species. 2. Characterize stock structure of the harvest. 3. Evaluate quality of harvest data. 2b. Identify and describe past and present subsistence harvest use patterns. 1. Describe historic methods and means (C&T) by species, area. 2. Describe current methods and means (C&T) by species, area. 3. Describe, document historic and current processes, distribution practices 4. Identify environmental, demographic, regulatory, socioeconomic factors affecting subsistence harvest levels.
3. Develop and evaluate management strategies for subsistence fisheries.	3a. Develop and evaluate management strategies for subsistence fisheries. 1. Evaluate usefulness and effectiveness of current regulations for subsistence harvests. 2. Develop information sharing between stakeholders and agencies. 3b. Assess impacts of other fisheries on subsistence fisheries. 1. Describe relationship between sport and subsistence fisheries for specific stocks on federal public waters. 2. Describe socioeconomic impacts of other fisheries.

Gap analysis for the Copper River freshwater species subsistence fishery unit, 2004.

	State	of	Knowledge	To Be	Done
Information Need	**Adequate**	**Partially known**	**Largely unknown**	**No Action**	**Consider Proposals**
1. Estimate or index total abundance and composition by species.		**X**			**X**
2. Evaluate spawning abundance needed to sustain subsistence fisheries.			**X**		**X**
3. Identify and characterize critical factors affecting population dynamics.		**X**		**X**	
4. Document historic distribution and abundance levels.		**X**			**X**
2.a.1. Estimate subsistence harvest by location, gear type, species.	**X**			**X**	
2.a.2. Characterize stock structure of the harvest.			**X**	**X**	
2.a.3. Evaluate quality of harvest data.			**X**	**X**	
2.b.1. Describe historic methods and means (C&T) by species, area.	**X**			**X**	
2.b.2. Describe current methods and means (C&T) by species, area.	**X**			**X**	
2.b.3. Describe, document historic and current processes, distribution practices		**X**		**X**	
2.b.4.Identify environmental, demographic, regulatory, socioeconomic factors affecting subsistence harvest levels.		**X**			**X**
3.a.1. Evaluate usefulness and effectiveness of current regulations for subsistence harvests.			**X**		**X**
3.a.2. Develop information sharing between stakeholders and agencies.		**X**			**X**
3.b.1. Describe relationship between sport and subsistence fisheries for specific stocks on federal public waters			**X**		**X**
3.b.2. Describe socioeconomic impacts of other fisheries.			**X**	**X**	

Strategic Plan for Prince William Sound-Delta Salmon

Because of very limited subsistence fisheries for salmon within Prince William Sound, the workgroup concluded that inclusion of an information need to identify, catalog and assess salmon stocks is outside the 3-5 year planning horizon for the Monitoring Program; however, this information need should be re-considered when the strategic plan is updated. Considering the relatively small subsistence fisheries for salmon in this fishery unit, the workgroup concluded that it would be inappropriate to include any information needs relating to developing or evaluating management strategies for subsistence fisheries within the planning horizon.

Objectives and information needs identified for goals of the Prince William Sound Delta salmon subsistence fishery unit, 2004.

Goals	Objectives / Information Needs
1. Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.	1a. Characterize and define abundance, composition and timing of salmon populations that sustain subsistence fisheries. 1. Determine timing, migratory patterns attributable to hatchery stock, sex, age. 2. Estimate or index abundance of total run by species. 3. Determine timing, migratory patterns attributable to wild stock, sex, age. 1b. Evaluate spawning escapement needed to sustain subsistence fisheries. 1. Obtain reliable estimates of spawning escapement over time and across escapement ranges. 2. Document historic escapement levels. 3. Estimate distribution of spawning abundance.
2. Assess and monitor subsistence fisheries to document and provide for subsistence uses.	2a. Document and estimate subsistence harvest and effort. 1. Characterize stock structure of the harvest. 2. Estimate subsistence harvest and effort by location, gear type, species. 2b. Identify and describe past and present subsistence harvest use patterns. 1. Describe historic methods and means by species, area. 2. Describe current methods and means by species, area. 3. Describe and document historic and current processes and distribution practices. 4. Identify environmental, demographic, regulatory and socioeconomic factors affecting subsistence harvest levels.

Strategic Plan for Copper River Rainbow/Steelhead

As an incidental species of relatively low abundance, steelhead was identified as a separate fishery unit. This fishery unit also addresses subsistence fisheries for resident rainbow trout within the Copper River drainage. The central information need for this fishery unit is estimation of, and management for, sustainable harvest levels. Similar to the rationale for Prince William Sound-Delta salmon, the workgroup concluded that for this fishery unit it would be inappropriate to include any information needs relating to developing or evaluating management strategies for subsistence fisheries within the planning horizon.

Objectives and information needs identified for goals of the Copper River steelhead subsistence fishery unit, 2004.

Goals	Objectives / Information Needs
1. Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.	1a. Characterize and define abundance, composition and run timing of steelhead populations that contribute to subsistence fisheries. 1. Estimate or index abundance of total run by species. 2. Determine timing, migratory patterns attributable to wild stock, sex, age. 3. Identify, catalog, and assess stocks. 1b. Evaluate spawning escapement needed to sustain returns. 1. Obtain reliable estimates of spawning escapement over time and across escapement ranges. 2. Document historic escapement levels. 3. Estimate distribution of spawning populations. 4. Understand relation between escapement and production. 1c. Identify and characterize critical factors that affect population dynamics. 1. Evaluate critical attributes of life history affecting production. 2. Assess impacts of fisheries on stock specific production.
2. Assess and monitor subsistence fisheries to document and provide for subsistence uses.	2a. Document and estimate subsistence harvest and effort. 1. Characterize stock structure of the harvest. 2. Estimate subsistence harvest by location, gear type, species. 3. Evaluate quality of harvest data. 2b. Identify and describe past and present subsistence harvest use patterns. 1. Describe historic methods and means of harvest by area. 2. Describe current methods and means of harvest by area. 3. Describe and document historic and current processes and distribution practices.

Strategic Plan for Copper River Eulachon

Although eulachon represent a much smaller proportion of overall subsistence harvests than do salmon, the workgroup concluded that there are legitimate information needs for all three goals to consider under the Monitoring Program within this planning horizon. In fact, Goal 3 information needs, particularly interactions between subsistence and other fisheries, have already been addressed under the Monitoring Program. Given the paucity of knowledge about eulachon in general, the workgroup developed an extensive framework of information needs for this fishery unit.

Objectives and information needs identified for goals of the Copper River eulachon subsistence fishery unit, 2004.

Goals	Objectives / Information Needs
1. Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.	1a. Characterize and define abundance, composition and timing of eulachon populations that sustain subsistence fisheries. 1. Estimate or index abundance of total run. 2. Determine timing, migratory patterns attributable to stock, sex, age. 3. Describe population structure of eulachon of the CRD and PWS. 1b. Evaluate spawning biomass needed to sustain subsistence fisheries. 1. Obtain reliable estimates of spawning biomass over time, spawning ranges. 2. Understand relation between spawning biomass and production. 1c. Identify, characterize critical factors affecting population dynamics. 1. Evaluate critical attributes of life history affecting freshwater survival. 2. Assess impacts of fisheries on stock specific production.
2. Assess and monitor subsistence fisheries to document and provide for subsistence uses.	2a. Document and estimate subsistence harvest and effort. 1. Characterize stock structure of the harvest. 2. Estimate subsistence harvest and effort by location, gear type, species. 3. Evaluate quality of harvest data. 2b. Identify, describe past/present subsistence harvest use patterns. 1. Describe historic methods and means of harvest by area. 2. Describe current methods and means of harvest by area. 3.Describe, document historic and current processes and distribution practices. 4. Identify environmental, demographic, regulatory and socioeconomic factors affecting subsistence harvest levels.
3. Develop and evaluate effective regulatory and management strategies to provide for subsistence uses.	3a. Develop and evaluate management strategies for subsistence fisheries. 1. Evaluate usefulness, effectiveness of current regulations for subsistence harvests. 2. Develop information sharing between stakeholders and agencies. 3b. Assess impacts of other fisheries on subsistence fisheries. 1. Describe total harvest rates by fishery for specific stocks of interest. 2. Describe interactions between subsistence and other fisheries. 3. Describe socioeconomic impacts of other fisheries.

Strategic Plan for Prince William Sound-Delta Freshwater Species

The primary species of interest include cutthroat trout, Dolly Varden, and whitefish. Of concern is the potential development of subsistence fisheries that could exceed sustainable levels. Therefore, the workgroup included information needs that address both sustainability of freshwater fish populations (Goal 1) and monitoring of subsistence fisheries (Goal 2).

Objectives and information needs identified for goals of the Prince William Sound-Delta freshwater species subsistence fishery unit, 2004.

Goals	Objectives / Information Needs
1. Obtain, develop, and improve information to sustain fish populations necessary to provide for subsistence uses.	1a. Characterize, define abundance, composition and timing of freshwater species populations that sustain subsistence fisheries. 1. Estimate or index total abundance and composition by species. 2. Determine timing, migratory patterns attributable to stock sex, age.
2. Assess and monitor subsistence fisheries to document and provide for subsistence uses.	2a. Document and estimate subsistence harvest and effort. 1. Characterize stock structure of the harvest. 2. Estimate subsistence harvest and effort by location, gear type, species. 2b. Identify and describe past and present subsistence harvest use patterns. 1. Describe historic methods and means by species, area. 2. Describe current methods and means by species, area. 3. Describe and document historic and current processes and distribution practices. 4. Identify environmental, demographic, regulatory and socioeconomic factors affecting subsistence harvest levels.

Conclusions

This strategic plan identifies information needed to manage for subsistence uses on Federal public lands in the Copper River basin and Prince William Sound. The plan is envisioned as being dynamic in that the gap analysis can be updated annually, providing a timely mechanism to identify strategic priorities for information in each year's annual monitoring plan. This strategic plan should provide an explicit and rigorously developed forum for researchers, the TRC, the Council, and the Board to focus Monitoring Program funding towards the highest informational priorities in the Southcentral Region.

For 2007 and the remainder of the 3-5 year planning horizon, FIS staff will annually update the project inventory and gap analysis. FIS staff will utilize the expertise of the workgroup to track projects, assess results, and evaluate the state of knowledge relevant to each information need. This information will provide the basis to identify priority information needs for each year's Monitoring Plan.